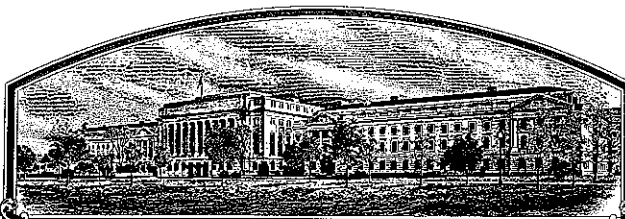


No.



9700319

# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

**NASH Research Foundation**

Whereas, THERE HAS BEEN PRESENTED TO THE

**Secretary of Agriculture**

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THEREOF IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

**WHEAT, COMMON**

**'Elkhorn'**



Attest:

*Jan Marie*

Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this thirtieth day of July in the year of our Lord one thousand nine hundred and ninety-nine.

*Don Gilman*  
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
SCIENCE AND TECHNOLOGY DIVISION - PLANT VARIETY PROTECTION OFFICE

# APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate)		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME
NDSU Research Foundation		ND8933	"Elkhorn"
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)		5. TELEPHONE (include area code)	FOR OFFICIAL USE ONLY PVPO NUMBER 9700319
c/o Executive Director P.O. Box 5014 Fargo, ND 58105-5014		701-231-8931	
		6. FAX (include area code)	FILING DATE
		701-231-1013	30 May 1997
7. GENUS AND SPECIES NAME	8. FAMILY NAME (Botanical)		FILING AND EXAMINATION FEE: FEE \$ 2450.00 DATE 05/30/97
Triticum aestivum L.	Gramineae		
9. CROP KIND NAME (Common name)			CERTIFICATION FEE: FEE \$ 300.00 DATE Aug 2, 1999
Hard red winter wheat			
10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (incorporation, partnership, association, etc.) (Common name)			14. TELEPHONE (include area code)
501 (c) (3) Corporation - NDSU Research Foundation			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION		12. DATE OF INCORPORATION	15. FAX (include area code)
North Dakota		May, 1989	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS			16. FAX (include area code)
James A. Anderson Dale Zetocha USDA-ARS Wheat Genetics Executive Director 209 Johnson Hall NDSU Research Foundation Washington State University P.O. Box 5014 Pullman, WA 99163 Fargo, ND 58105-5014			
16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)			
a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of the Variety d. <input type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Applicant's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,600 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in an approved public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,450), made payable to "Treasurer of the United States" (Mail to PVPO)			
17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act)			
<input type="checkbox"/> YES If "yes," answer items 18 and 19 below <input checked="" type="checkbox"/> NO If "no," go to item 20			
18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?		19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?	
<input type="checkbox"/> YES <input type="checkbox"/> NO		<input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED	
20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES?			
<input checked="" type="checkbox"/> YES If "yes," give names of countries and dates <input type="checkbox"/> NO			
USA - Release date March 23, 1995 USA - First seed sale August 20, 1996			
21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.			
The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.			
Applicant(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF APPLICANT (Owner(s))		SIGNATURE OF APPLICANT (Owner(s))	
Dale Zetocha			
NAME (Please print or type)		NAME (Please print or type)	
Dale Zetocha			
CAPACITY OR TITLE	DATE	CAPACITY OR TITLE	DATE
Executive Director	5/29/97		
NDSU Research Foundation			

**EXHIBIT A – ORIGIN AND BREEDING HISTORY****'ELKHORN'**

Pedigree: Norstar/4/Centurk//Winoka/Ulianovka/3/SD76694

1984: Final cross made; NDSU greenhouse

1985: F1 generation; NDSU greenhouse; all plants uniform

1986: F2 bulk population; NDSU research land; no selection applied; segregating for maturity, plant height, and disease resistance.

1987: F3 bulk population; NDSU research land; selected 100 random spikes; segregating for maturity, plant height, and disease resistance.

1988: F4 head row (F3-derived); NDSU research land; selected based on appropriate plant height, maturity, and grain yield; no segregation observed within the headrow.

1989: F5 Observation Nursery; NDSU research land; selected based on appropriate plant height, maturity, field resistance to leaf and stem rust, grain protein content, test weight, grain yield, and greenhouse-based seedling resistance to race TNMK of stem rust; no segregation observed within the single row.

1990: F6 Preliminary Yield Trial (tested as ND8933); NDSU research land; selected based on appropriate plant height, maturity, field resistance to leaf and stem rust, grain protein content, test weight, grain yield, milling and baking quality; segregation for race TNMK of stem observed in greenhouse-based seedling tests.

1991: F7 Advanced Yield Trial, NDSU research land; selected based on appropriate plant height, maturity, field resistance to leaf and stem rust, grain protein content, test weight, grain yield, milling and baking quality; segregation for race TNMK of stem observed in greenhouse-based seedling tests.

1992: ND HRW Variety Trial, NDSU research land, Northern Regional Performance Nursery; selected based on appropriate plant height, maturity, field resistance to leaf and stem rust, grain protein content, test weight, grain yield, milling and baking quality; segregation for race TNMK of stem observed in greenhouse-based seedling tests.

1993: ND HRW Variety Trial, NDSU research land, Northern Regional Performance Nursery; selected based on appropriate plant height, maturity, field resistance to leaf and stem rust, grain protein content, test weight, grain yield, milling and baking quality; segregation for race TNMK of stem observed in greenhouse-based seedling tests

1994: ND HRW Variety Trial, NDSU research land, Northern Regional Performance Nursery; selected based on appropriate plant height, maturity, field resistance to leaf and stem rust, grain protein content, test weight, grain yield, milling and baking quality; segregation for race TNMK of stem observed in greenhouse-based seedling tests

1995: ND8933 released as the cultivar 'Elkhorn'

**EXHIBIT A – ORIGIN AND BREEDING HISTORY, cont.****Evidence of uniformity and stability:**

Elkhorn has been observed to be stable and uniform with respect to plant morphology since 1988 when it was first grown as an F3-derived line. This represents seven generations (1988-1994) through which this stability and uniformity have been observed. Approximately 1/4 of plants are susceptible to stem rust race 15TNMK in the seedling stage. However, these plants have low receptivity when grown as adult plants in the field. Damaging levels of stem rust have not been observed on Elkhorn under field conditions in which susceptible cultivars (e.g. Norstar) have significant infection.

**EXHIBIT B. – NOVELTY STATEMENT**

Elkhorn is most similar to Norstar. Elkhorn can be differentiated from Norstar based on field reaction to stem rust race 15 TNMK, heading date, and height as described below.

1. Elkhorn differs from Norstar in exhibiting resistant reactions to race 15 TNMK of stem rust when adult plants are inoculated in the field. Norstar is susceptible under these conditions.
2. Elkhorn is both substantially earlier in heading date and shorter than Norstar under North Dakota field conditions as shown in Table B1 below.

Table B1. Heading date and height of Elkhorn and Norstar grown in the hard red winter wheat variety trial at 7 locations in North Dakota in 1992. All trials contained 4 replications and the LSD value is based on all entries grown in the trial.

Trait	Variety	Casselton	Hettinger	Langdon	Minot (fallow)	Minot (no-till)	Williston (fallow)	Williston (no-till)	Avg.
Heading (d after June 1)	Elkhorn	14.0	12.0	23.0	15.0	13.0	12.0	9.0	14.0
	Norstar	19.7	17.0	25.8	16.0	14.0	13.0	10.0	16.5
	LSD (0.05)	1.3	3.0	2.0	2.0	1.0	1.0	1.0	
Height (cm)	Elkhorn	107.0	68.0	100.0	75.2	61.0	76.0	70.0	90.7
	Norstar	120.0	76.0	114.8	83.8	72.1	88.3	81.3	103.6
	LSD (0.05)	5.9	15.0	5.9	5.6	5.6	5.6	8.4	



## 11. HEAD:

☐ 1 Density: 1 = LAX 2 = DENSE☐ 4 Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE  
4 = OTHER (Specify) fusiform☐ 4 Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED☐ 1 Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED  
5 = BROWN 6 = BLACK 7 = OTHER (Specify): \_\_\_\_\_☐ 0 ☐ 9 CM. LENGTH☐ 1 ☐ 0 MM. WIDTH

## 12. GLUMES AT MATURITY:

☐ 2 Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.)  
3 = LONG (CA. 9 mm.)☐ 2 Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.)  
3 = WIDE (CA. 4 mm.)☐ 2 Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED  
4 = SQUARE 5 = ELEVATED 6 = APICULATE☐ 3 Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

## 13. COLEOPTILE COLOR:

☐ 1 1 = WHITE 2 = RED 3 = PURPLE

## 14. SEEDLING ANTHOCYANIN:

☐ 1 1 = ABSENT 2 = PRESENT

## 15. JUVENILE PLANT GROWTH HABIT:

☐ 1 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

## 16. SEED:

☐ 1 Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL☐ 1 Check: 1 = ROUNDED 2 = ANGULAR☐ 2 Brush: 1 = SHORT 2 = MEDIUM 3 = LONG☐ 1 Brush: 1 = NOT COLLARED 2 = COLLARED☐ Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN  
4 = BROWN 5 = BLACK☐ 3 Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) \_\_\_\_\_☐ 0 ☐ 6 MM. LENGTH☐ 0 ☐ 3 MM. WIDTH☐ 2 ☐ 9 GM. PER 1000 SEEDS

## 17. SEED CREASE:

☐ 2 Width: 1 = 60% OR LESS OF KERNEL 'WINOKA'  
2 = 80% OR LESS OF KERNEL 'CHRIS'  
3 = NEARLY AS WIDE AS KERNEL 'LEMHI'☐ 1 Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT'  
2 = 35% OR LESS OF KERNEL 'CHRIS'  
3 = 50% OR LESS OF KERNEL 'LEMHI'

## 18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

☐ 2 STEM RUST (Race)☐ 1 LEAF RUST (Race)☐ 0 STRIPE RUST (Race)☐ 0 LOOSE SMUT☐ 0 POWDERY MILDEW☐ 0 BUNT☐ OTHER (Specify) \_\_\_\_\_

## 19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

☐ 0 SAWFLY☐ 0 APHID (Bydr.)☐ 0 GREEN BUG☐ 0 CEREAL LEAF BEETLE☐ OTHER (Specify) \_\_\_\_\_HESSIAN FLY  
RACES:☐ 0 GP☐ 0 A☐ 0 B☐ 0 C☐ 0 D☐ 0 E☐ 0 F☐ 0 G

## 20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Norstar	Seed size	Norstar
Leaf size	Norstar	Seed shape	Norstar
Leaf color	Norstar	Coleoptile elongation	Norstar
Leaf carriage	Norstar	Seedling pigmentation	Norstar

## INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

- (a) L.W. Briggles and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.
- (b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

EXHIBIT E  
STATEMENT OF THE BASIS OF OWNERSHIP

1. NAME OF APPLICANT(S)

NDSU Research Foundation

2. TEMPORARY DESIGNATION  
OR EXPERIMENTAL NUMBER

ND8933

3. VARIETY NAME

'Elkhorn'

4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)

c/o Executive Director  
P. O. Box 5014  
Fargo, ND 58105-5014

5. TELEPHONE (include area code)

701-231-8931

6. FAX (include area code)

701-231-1013

7. PVPO NUMBER

9700319

8. Does the applicant own all rights to the variety? Mark an "X" in appropriate block. If no, please explain.

☒ YES ☐ NO

9. Is the applicant (individual or company) a U.S. national or U.S. based company?  
If no, give name of country

☒ YES ☐ NO

10. Is the applicant the original owner? ☐ YES ☒ NO If no, please answer the following:

a. If original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. national(s)?

☒ YES ☐ NO If no, give name of country

b. If original rights to variety were owned by a company, is the original owner(s) a U.S. based company?

☐ YES ☐ NO If no, give name of country

11. Additional explanation on ownership (If needed, use reverse for extra space):

See attached Addendum to Exhibit for additional explanation.

PLEASE NOTE:

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, and marital or familial status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotope, etc.) should contact the USDA Office of Communications at (202) 720-5881 (voice) or (202) 720-7808 (TDD).

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call 1-800-245-6340 (voice) or (202) 720-1127 (TDD). USDA is an equal employment opportunity employer.



**EXHIBIT E - STATEMENT OF THE BASIS OF THE APPLICANT'S OWNERSHIP**

Dr. James A. Anderson is the plant breeder who developed the winter wheat cultivar 'Elkhorn' for which Plant Variety Protection is hereby sought. Dr. Anderson was an employee of the North Dakota Agricultural Experiment Station and North Dakota State University during the time for development of 'Elkhorn' and is currently employed by the USDA-ARS at Pullman, WA. During his time of employment, Dr. Anderson, by agreement and because of the condition of the use of facilities and funds of the North Dakota Agricultural Experiment Station and North Dakota State University, has assigned all ownership rights to 'Elkhorn' winter wheat to the North Dakota Agricultural Experiment Station and North Dakota State University.

North Dakota State University on behalf of the North Dakota Agricultural Experiment Station has assigned all ownership of 'Elkhorn' winter wheat to the NDSU Research Foundation. The NDSU Research Foundation is a non-profit corporation set up to own and manage the intellectual property of North Dakota State University.

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